



SATELLITE TV ANTENNA CONTROLLER

RFM-1000 TECHNICAL MANUAL



I*ndex*

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BILL OF MATERIALS

A system consists of several components.

Mount



Note: Your LNB may vary from that pictured depending upon your system configuration.

Controller Front view



Controller Rear view



Items included with the system and not shown.

- 1 ea Roof top Connector Housing
- 1 ea Clam Shell
- 1 ea LNB Landing Plate
- 15' Control Cable
- 1 ea Connector, green, 12 pin
- 1 ea Power Supply, 12 VDC 5 amp
- 1 ea User Guide
- 1 ea vGPS Installation Kit for DirecTV SWM and SHAW Direct systems.

Front view



POWER "ON".....

SD Card Slot

LCD Display.....

SEARCH

STOW

Front Buttons Function

Buttons		Function
POWER	* * * R F M O G U L * * * * * * W I W O R L D * * *	Turn Power ON
SEARCH	S H A W D i r e c t H D S E A R C H . . .	Request to SEARCH
STOW	S T O W & P O W E R O F F P l e a s e W a i t	Request to STOW
SEARCH+STOW	S H A W D i r e c t H D P O W E R O F F	Turn Power OFF

Note: Pressing **SEARCH** / **STOW** at the same time will turn **POWER OFF**.



CONFIGURATIONS

TV Network DirecTV SWM=	101, 99, 103 Satellites	
Dish Network =	110, 119, 129 Satellites	
Bell Express =	82, 91 Satellites	(For Canadian Use Only)
SHAW Direct =	107.3, 111.1 Satellites	(For Canadian Use Only)

CONDITIONS

Dish Stowed	Power shuts down automatically after 10 seconds. If dish is stowed and power is turned ON, the display will continue to show <u>Stowed</u> for two minutes if no other command is selected then the power will shut down automatically.
Searching	Will display as the dish is in the searching routine and not peaking.
Peaking	Will display if the dish is peaking a signal.
Locked	Will display when the dish has completed searching and is Locked onto the correct satellite (s) (TV Services). Two 1/2 minutes after locking onto satellite(s) the power will shut OFF.
Stowing	Will display when dish Stow command has been selected and the dish is moving to the Stowed position. When STOWED the Power will shut OFF automatically.

Rear view



To Satellite Receiver

To Antenna

Dip Switches

Maintenance Port

Mount Connections

Ignition STOW option and/or alternate 12 VDC

Power IN (12 VDC)

CONNECTIONS

TO SATELLITE RECEIVER

Coax connection to your satellite receiver (Satellite IN)

TO ANTENNA:

Coax connection from the Antenna's LNB through the mount

6 PIN DIP SWITCH:

Used for programming or configuration of the controller (See Configuration)

MAINTENANCE PORT

Used for diagnostic purposes

CONTROL CABLE CONNECTION:

Termination of the 12 wires of the control cable to the controller takes place here.

OPTIONAL IGNITION STOW and POWER:

Connection for optional Ignition STOW and Optional 12 VDC power

POWER:

Input for 12 VDC cord that connects to the 12VDC 5 amp. power supply.

C onfiguration



Configurable Dip Switch

On the back of the controller are 6 Dip Switches which are used to program or configure the controller to which of the services and or satellites to locate. The position of these switches will only be read at POWER ON. To program or configure your controller to your specific needs the dip switches will be required to be placed into one of the following positions.

Dip Switch Functions			
CONFIGURATION		SPECIAL FUNCTIONS	
Dip Switch	Mode	Dip Switch	Mode
<div> <div>Up</div> <div>Dn</div> </div>		<div> <div>Up</div> <div>Dn</div> </div>	
<div> <div>UP</div> <div>1 2 3 4 5 6</div> </div>	DirectTV HD	<div> <div>UP</div> <div>1 2 3 4 5 6</div> </div>	Cycle Test
<div> <div>UP</div> <div>1 2 3 4 5 6</div> </div>	Dish Network HD	<div> <div>UP</div> <div>1 2 3 4 5 6</div> </div>	Manual Mode ELEVATION
<div> <div>UP</div> <div>1 2 3 4 5 6</div> </div>	BELL TV	<div> <div>UP</div> <div>1 2 3 4 5 6</div> </div>	Manual Mode AZIMUTH
<div> <div>UP</div> <div>1 2 3 4 5 6</div> </div>	SHAW Direct HD	<div> <div>UP</div> <div>1 2 3 4 5 6</div> </div>	Manual Mode SKEW
		<div> <div>UP</div> <div>1 2 3 4 5 6</div> </div>	Manual Mode SHOW

Canadian Use →

Canadian Use →

El 45 degrees up, Skew 45 degrees, return to Skew 0 degree, Az 360 degree turn to clockwise limit, return to stow position and stow. Continuous movement of the mount until power OFF.

El 45 degrees up, Skew 15 degrees, simulate satellite peak, clockwise in Az to 45 degrees, return to Skew 0 degree and stow. Continuous movement of the mount until power OFF.

SPECIAL FUNCTION Dip Switch Settings

The Dip Switches may be configured to operate the mount in a special way depending upon their settings. The position of these switches will only be checked at POWER ON. After the settings have been changed the controller will follow the commands given by the changed settings. The "Special Functions" will perform the following actions:

To EXIT any of the following functions press SEARCH and STOW at the same time then release. This will power OFF the controller and allow you to change the dip switch settings.

SHOW Mode

When the switches are in this position and you power up and press the SEARCH button, the mount will

- Raise in Elevation,
- Skew a predetermined amount,
- Rotate 45% in Azimuth,
- Simulate peaking on a satellite,
- Pause and then return to the stowed position and will continuously repeat this procedure until the dish is stowed. It is designed to show the mount in all its movements for display purposes.

MANUAL Movement AZimuth

When the switch is in this position and you turn ON power and press the SEARCH button, the mount will respond by

moving clockwise. Press the STOW button and the mount will respond by moving counterclockwise in azimuth

MANUAL Movement ELevation

When the switch is in this position and you turn ON and press the SEARCH button, the mount will respond by

moving UP. Press the STOW button and the mount will respond by moving DOWN in elevation.


MANUAL Movement SKew


When the switches are in this position and you turn ON and press the SEARCH button the antenna will respond by


rotating clockwise. Press the STOW button and the antenna will respond by rotating counterclockwise.

Note: It is the responsibility of the person changing the settings to return them to the proper configuration following any Special Setting change. Only change the dip switch configuration when the power is OFF. If your system does not seem to operate properly, turn the power off (see procedure above) and check the position of the Dip Switches. **When the controller is reconfigured to "Auto" mode after using it in "Manual" Mode and the mount is not in the stowed position it will STOW the dish before performing the SEARCH feature.**

CAUTION: The mount will move at your command. **DO NOT** rotate **CLOCKWISE** past the **CLOCKWISE LIMIT**. To do so may cause damage to the mount. It may be rotated manually anywhere within the **AZIMUTH** limit range. Counter Clockwise is ok at any time. Do not blind move your dish. **KNOW YOUR LIMITS BEFORE USING THIS COMMAND.**

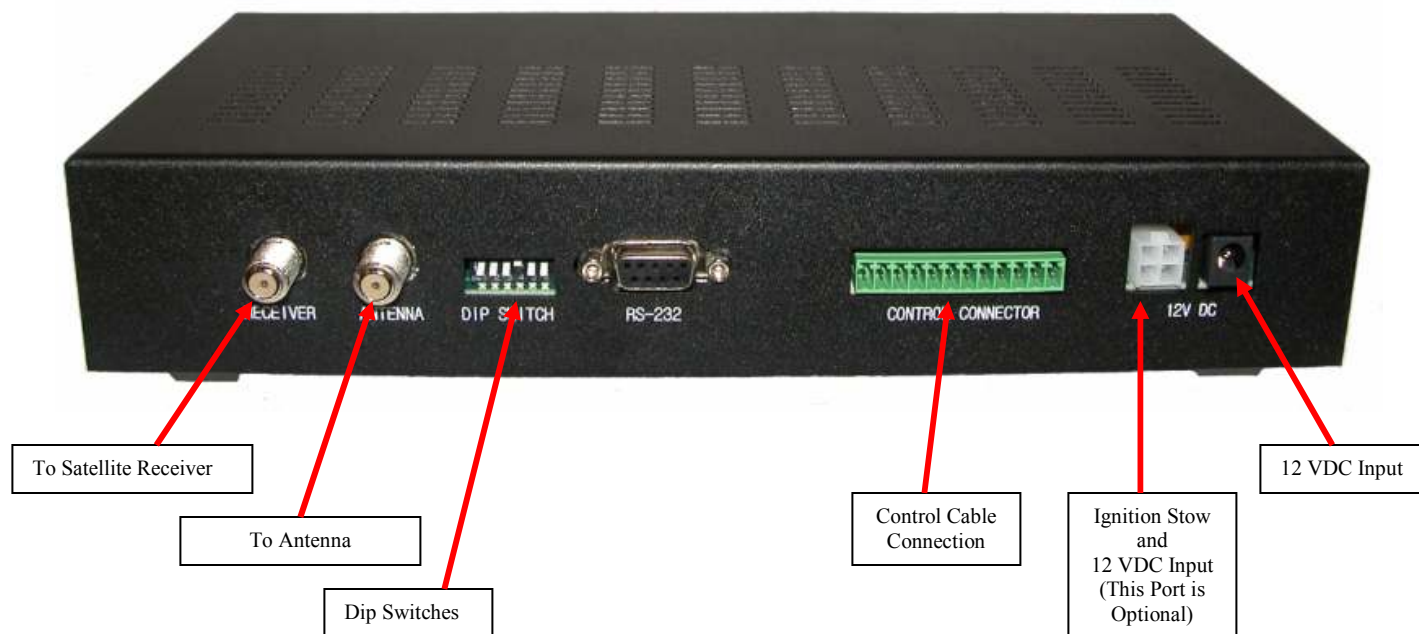
 SEARCH button - Raises
STOW button - Lowers

 SEARCH button - Clockwise
DOWN button - Counter-Clockwise

 SEARCH button - Clockwise
DOWN button - Counter-Clockwise

Turning Power ON will
start the automatic SHOW
movement

WIRING DIAGRAM



CONTROLLER CABLE CONNECTOR (Green Connector)

Pin	Color	How Used	Where Used
P1	Violet	Limit Sensor	EL Up
P2	Dk Blue	Limit Sensor	AZ
P3	Green	Limit Sensor	EL Down
P4	Gray	Encoder	SK
P5	Yellow	Encoder	AZ
P6	Brown	Encoder	EL
P7	Black	Ground	GND
P8	Red		VCC
P9	White	Power	AZ-B
P10	Pink	Power	AZ-A
P11	Lt Blue	Power	EL-B
P12	Orange	Power	EL-A



IGNITION STOW (OPTIONAL)

- P1 = To Positive side of Battery 12 VDC
 P2 = To + 12 VDC side of car ignition
 P3 = To Ground of Battery
 P4 = To Ground of Battery

2+	1+
4-	3-

Connections:

- P1 to the side of the car ignition and
- P2 to the +side of your battery and
- P3/P4 are connected to the negative side of the battery

When you turn your ignition key ON, your dish will automatically return to the STOWED position which is the travel position when wired using this plug.



POWER ON Pressing the POWER ON button will turn ON the power to the controller enabling it to perform the next function. Wait for this display to appear.



SEARCH (UP) Pressing the SEARCH button will instruct the mount to begin its searching routine and locate the satellites according to the settings of the dip switches.

STOW: (DOWN) Pressing the STOW button will instruct the mount to return to its Stowed or travel position and turn power OFF automatically. Note: be sure 12 VDC is present.

SEARCH (UP) & STOW (DOWN): Pressing the SEARCH *and* STOW buttons at the same time will manually turn the Power OFF.

AFTER LOCKING ONTO THE PROPER SATELLITE: The controller will remain ON and then turn off after 2 1/2 minutes. To STOW the dish press the POWER ON button to turn the controller ON and then press STOW.

The displays will look like this for each function

(CONFIGURATION refers to the Dip Switch settings that determine which satellites to locate.)

	Start Message
	Dip Switch Mode
	Starting (display version of software ***)
	If the Power is turned ON and the dish is IN the air and ON signal then "DISH ON SIGNAL" will be displayed, if the dish is in the Stowed position then "DISH STOWED" will be displayed.

See LCD Displays in this manual for all displays.

MEANING OF LCD DISPLAY

<div>*** RF MOGUL ***</div> <div>*** WIWORLD ***</div>	Start Message
<div>*** RF MOGUL ***</div> <div>CONFIGURATION</div>	Dip Switch Mode
<div>CONFIGURATION</div> <div>FIRMWARE ***</div>	Starting (display version of software ***)
<div>CONFIGURATION</div> <div>DISH STOWED</div>	If the Power is turned ON and the dish is IN the air and ON signal then "DISH ON SIGNAL" will be displayed, if the dish is in the Stowed position then "DISH STOWED" will be displayed.
<div>CONFIGURATION</div> <div>SEARCH . . .</div>	Start to search
<div>CONFIGURATION</div> <div>P : 00 000 00</div>	Showing Current Position (Skew, Azimuth, Elevation)
<div>CONFIGURATION</div> <div>PEAKING SIGNAL</div>	
<div>CONFIGURATION</div> <div>TESTING SIGNAL</div>	Scanning ID
<div>CONFIGURATION</div> <div>TESTING DVB</div>	Trying to lock on DVB
<div>CONFIGURATION</div> <div>FREQUENCY LOCKED</div>	Locked on the frequency

<div> <div>C O N F I G U R A T I O N</div> <div>S C A N I D S A T : 1 0 1</div> </div>	Reading NID
<div> <div>C O N F I G U R A T I O N</div> <div>P E A K I N G v G P S</div> </div>	Peaking with vGPS Device
<div> <div>C O N F I G U R A T I O N</div> <div>v G P S 4 0 1 1 2 - 1 2</div> </div>	Showing vGPS information (Latitude, Longitude, Skew)
<div> <div>C O N F I G L O C K E D</div> <div>v G P S 4 0 1 1 2 - 1 2</div> </div>	Search Completed and Locked onto Satellite

These displays will assist in the understanding of each function of the controller. These steps and displays will also assist in diagnosing any abnormalities in the operation of the system. You will find it interesting to follow along with what the controller is doing at any given time. Remember, the only thing you have to do to operate this system it to.....

1. Turn POWER ON, wait approximately 5-7 seconds...
2. Press SEARCH or STOW depending on what you want the mount to do.
3. Wait for "LOCK". POWER will turn OFF 2 1/2 minutes after LOCK

ervice messages

Service messages will be displayed on the LCD screen should a condition occur that a person should be alerted to. If a condition should occur the following Service Messages will be displayed:

Service Message

AZ Count	Is displayed if azimuth motor current can be detected in both directions but no counts are detected.
AZ Motor	Is displayed if no azimuth motor current is detected or Maximum azimuth motor current is detected and there are no counts.
AZ Limit	Is displayed when total azimuth motor counts exceed maximum count value plus 20%.
EL Count	Is displayed if elevation motor current can be detected in both directions but no counts are detected.
EL Motor	Is displayed if no elevation motor current is detected or Maximum elevation motor current is detected and there are no counts.
EL Limit	Is displayed when total elevation motor counts exceed maximum count value plus 20%.
SK Count	Is displayed if skew motor current can be detected in both directions but no counts are detected.
SK Motor	Is displayed if no skew motor current is detected or Maximum skew motor current is detected and there are no counts.
SK Limit	Is displayed when total skew motor counts exceed maximum count value plus 10%.
No Signal	Is displayed when the Antenna Controller has searched the entire sky but no signals were detected to stop and peak.
No Sat ID	Is displayed when the Antenna Controller has searched and Peaked the entire sky but no Satellites were ID'ed.

Firmware upgrade

Should any firmware upgrades be available they will be posted on RF Mogul WEB site www.rfmogul.com under "Software Upgrade". Select "Television" and download the latest software to your Desktop and transfer the file to your SD Card in the "root directory". Make sure that this is the only file listed in your "root directory". Insert your SD Card into the controller and turn power ON. The software will automatically download to your controller. Remove the SD Card once the load function is complete.

When should you think about downloading new software?

1. To take advantage of new innovative features offered by the latest revision of software.
2. If you have called your installer and he recommends it.
3. If you read the History of the new software and you determine that you could benefit from its features.

WARRANTY



Effective
3 Dec 2011

RF Mogul 2 YEAR Limited with 3rd YEAR Option TELEVISION Product Warranty

RF Mogul will warrant this product against defects in materials or workmanship when operated within the constraints of its intended use for a period of two (2) years from the date of original purchase.

REQUIREMENTS FOR WARRANTY

1. No warranty claim will be honored unless at the time the claim is made, the customer presents proof of purchase to an authorized RF Mogul or its authorized dealer. Customer must provide proof of purchase with a dated sales receipt of installation of the RF Mogul product to verify the product is under warranty. If the date of purchase/installation cannot be verified, the warranty period shall be considered to begin thirty (30) days after the date of manufacture.
2. The party placing an order for a warranty item will be required to place a Credit Card on file with RF Mogul prior to a part being sent out. The card will only be charged as per the agreements in the warranty listed except in the case of:
 - a) Non return of an item (See "Returning Parts to the Factory" for details) or
 - b) If upon inspection of the returned item no defect is found. If *no problem* is found in the returned item, the parties credit card will be *billed for freight from and to the factory and will be charged for the replaced part* regardless of status of warranty.
3. It is the responsibility of the requester of the replacement part to see that the defective part is returned to RF Mogul in good condition and in a timely manner.

FIRST YEAR

AFTER DATE OF INSTALLATION

During the First year after installation, RF Mogul will warranty its product against defects when it has been installed and operated within the constraints of its intended use. The customer will have two (2) options should their system fail due to one of these defects.

OPTIONS

- **Option 1** - At the request of the customer, RF Mogul will send to the customer by ground freight a replacement part at no charge and provide instructions to the customer on proper installation procedures and pay a 'Flat Rate' for the part replacement.
- **Option 2** - At the request of the customer, RF Mogul will provide a list of authorized dealers to the customer and the customer can make arrangements for an authorized dealer to order and or replace the defective part and pay this authorized dealer the flat rate as determined by the "Flat Rate" schedule for the part replacement.

FREIGHT

- RF Mogul will pay for freight both ways during the first year.
- Freight will be prepaid to RF Mogul by way of a UPS Call Tag provided.

DEFECTIVE PARTS

- The defective part(s) will be required to be returned to RF Mogul for inspection and evaluation. See "Returning Parts to the Factory" for details.

RESPONSIBILITY

- The customer is responsible for travel expenses when travel is required to get to a dealer for repairs. Customer is responsible for any charges over and above the "Flat Rate" Schedule.
- RF Mogul will pay the party replacing the defective part a "Flat Rate" for its replacement after it is returned to the factory and it has been inspected and verified that it is a "defective part".
- See Items 2-3 under Requirements for Warranty.

SECOND YEAR

AFTER DATE OF INSTALLATION

When installed and operated within the constraints of its intended use following the first year after installation and for the one (1) additional year which is year two (2), RF Mogul will replace a part found to be defective at no charge.

OPTIONS

- **Option 1** - At the request of the customer, RF Mogul will send to the customer by ground freight a replacement part at no charge for the part and provide instructions to the customer on proper installation procedures.
- **Option 2** - At the request of the customer, RF Mogul will provide a list of authorized dealers to the customer and the customer can make arrangements for an authorized dealer to order and or replace the defective part and pay this authorized dealer for the part replacement.

FREIGHT

- The requesting party will be responsible for the freight from and to the factory.

DEFECTIVE PARTS

- The defective part(s) will be required to be returned to RF Mogul for inspection and evaluation. See "Returning Parts to the Factory" for details.

RESPONSIBILITY

- It is the customers responsibility for travel expenses when travel is required to get to an authorized dealer for service and for any charge by that dealer.
- See Items 2-3 under Requirements for Warranty.

Failure to find a defect or failure to return a part will result in the execution of the terms of item 2 of this Requirements For Warranty agreement.

YEAR THREE

AFTER DATA OF INSTALLATION

OPTION EXTENDED WARRANTY \$350.00

When installed and operated within the constraints of its intended use following the **SECOND** year after installation and for the one (1) additional year which is year **THREE (3)**, RF Mogul will replace a part found to be defective at no charge and pay the freight from and to the factory and pay the fixed rate for repair based upon the "Fixed Rate" schedule. This option is non-transferable and available only to the original purchaser of the product at the time of installation. It is not and will not be offered at any other time.

OPTIONS

- **Option 1** - At the request of the customer, RF Mogul will send to the customer by ground freight a replacement part at no charge and provide instructions to the customer on proper installation procedures and pay a 'Flat Rate' for the part replacement.
- **Option 2** - At the request of the customer, RF Mogul will provide a list of authorized dealers to the customer and the customer can make arrangements for an authorized dealer to order and or replace the defective part and pay this authorized dealer the flat rate as determined by the "Flat Rate" schedule for the part replacement.

FREIGHT

- RF Mogul will pay for freight both ways during the extended warranty period.
- Freight will be prepaid to the customer and returned to RF Mogul by way of a UPS Call Tag provided.

DEFECTIVE PARTS

- The defective part(s) will be required to be returned to RF Mogul for inspection and evaluation. See "Returning Parts to the Factory" for details.

RESPONSIBILITY

- It is the customers responsibility for travel expenses when travel is required to get to an authorized dealer for service and for any charge by that dealer.
- See Items 2-3 under Requirements for Warranty.

Failure to find a defect or failure to return a part result in the execution of the terms of this warranty agreement

Parts Covered Under Warranty:

- Motors - Azimuth, Elevation and Skew
- Sensors - Azimuth, Elevation
- Worm Drive/Gear - Azimuth, Elevation
- Mount Base (excluding Skew Assembly, Antenna, LNB and LNB Arm)
- Skew Assembly (excluding Mount Base, Antenna, LNB and LNB Arm)
- Controller (In Door Unit)

Note: When it is determined that repairs cannot be made effectively in the field, a replacement unit (see Mount and Skew Assembly above) may be shipped and the defective unit returned to the factory for repairs. Replacement costs are specified in warranty periods; 90 Days, First Year after 90 Days and Year Two. See "Returning Parts to the Factory" for details.

Failure to find a defect with the returned part will result in execution of the terms of this warranty agreement

Parts not covered under warranty:

- Antenna (parabola)
- LNB Arm
- Cables - Coax or Control
- Azimuth/Elevation Covers
- Any part that has been determined to be abused or used in a way as to cause undo damage

Note: Replacement parts may be purchased from RF Mogul for repairs.

Flat Rate Schedule

The Flat Rate Schedule is a Labor Rate that RF Mogul will pay to replace the parts listed below when they are found to be defective.

- | | |
|---|-----------|
| • Motors - Azimuth, Elevation and Skew | \$ 50.00 |
| • Sensors - Azimuth, Elevation | \$ 50.00 |
| • Worm Drive/Gear - Azimuth, Elevation | \$ TBD |
| • Mount Base - (The Skew Assembly, Antenna, LNB and LNB Arm
will be required to be removed and reinstalled) | \$ 100.00 |
| • Skew Assembly - (excluding Mount Base, Antenna, LNB and LNB Arm) | \$ 50.00 |
| • Controller - (In Door Unit) | \$ 25.00 |
- **Note:** The defective part will be required to be returned to RF Mogul for inspection and evaluation. See Items 2-3 under Requirements for Warranty. See "Returning Parts to the Factory" for details.

RETURNING PARTS TO THE FACTORY

Parts returned to the factory must contain a Return Material Authorization (RMA) which will be provided by the RF Mogul Technical Support Department at the time of troubleshooting. This will ensure proper accountability of returned equipment or parts. Make sure that the following information is contained on your shipment.

RF Mogul

Attn: Product Evaluation Department

RMA # _____

3604 South Via Terra

South Salt Lake City, UT 84115

You must include your Return Address and Telephone Number failure to do so may result in you being billed for a non-returned part.

We appreciate your business. If you need to contact us please see the information below.

RF Mogul

3604 Via Terra

South Salt Lake City, UT 84115

Tele 801-895-3308

Fax 801-478-5850

www.rfmogul.com

sales@rfmogul.com

support@rfmogul.com

Thank you for purchasing a RF Mogul System.

PRODUCT SUPPORT

For product support please contact the following

UNITED STATES

- Your Installing Dealer is your first line of defense. If resolution cannot be made it may be passed onto the manufacture

The manufacture

RF Mogul
3604 South Via Terra
South Salt Lake City, UT 84115
Tel - 801-895-3308
www.rfmogul.com

CANADA

Your installing Dealer or Distributor

Your issue may be passed onto the manufacture for assistance

MEXICO

Your installing Dealer or Distributor

Your issue may be passed onto the manufacture for assistance